

CLAIMS

1. A *Muscodor* carrier formulation comprising:
 - a carrier,
 - a stabilizing agent, and
 - a culture of *Muscodor albus*,

wherein the culture and the stabilizing agent are adhered to the carrier.
2. The *Muscodor* carrier formulation of claim 1 wherein the carrier is grain.
3. The *Muscodor* carrier formulation of claim 2 wherein the grain is selected from the group consisting of corn, rye, barley, rice, wheat, oat bean, and soy.
4. The *Muscodor* carrier formulation of claim 1 wherein the carrier is absorptive material containing nitrogen and carbon sources.
5. The *Muscodor* carrier formulation of claim 1 wherein the stabilizing agent is a carbohydrate.
6. The *Muscodor* carrier formulation of claim 5 wherein the carbohydrate is selected from the group consisting of lactose, sucrose and trehalose.
7. The *Muscodor* carrier formulation of claim 5 wherein the carbohydrate is lactose.
8. The *Muscodor* carrier formulation of claim 1 further comprising a matrix wherein the carrier, culture, and stabilizing agent are encapsulated by the matrix.
9. The *Muscodor* carrier formulation of claim 8 wherein the matrix is a hydrogel.
10. A method for preparing a *Muscodor* carrier formulation comprising:
 - growing a culture of *Muscodor*;
 - inoculating a carrier with the culture of *Muscodor*;
 - adding a stabilizing agent to the carrier; and
 - drying the carrier.
11. The method of claim 10 wherein the stabilizing agent is a carbohydrate.

12. The method of claim 11 wherein the carbohydrate is selected from the group comprising sucrose, trehalose, and lactose.
13. The method of claim 12 wherein the carbohydrate is lactose.
14. The method of claim 10 wherein the carrier is a grain.
15. The method of claim 14 wherein the grain is selected from the group consisting of corn, rye, barley, rice, wheat, oat bean, and soy.
16. The method of claim 10 further comprising encapsulating the carrier before drying the carrier.
17. A synthetic mixture comprising pesticidally effective amounts of at least two of the following volatile organic compounds isolatable from an isolated culture of *Muscodor albus*: 2-methyl-1-butanol, isobutyl alcohol, isobutyric acid, 3-methyl-1-butanol, 3-methylbutyl acetate, and ethyl propionate.
18. The mixture of claim 17 wherein the at least two volatile organic compounds comprise isobutyric acid and at least one of 2-methyl-1-butanol, isobutyl alcohol, ethyl propionate, and 3-methyl-1-butanol.
19. A synthetic mixture comprising pesticidally effective amounts of at least two of the following volatile organic compounds isolatable from an isolated culture of *Muscodor albus*: 2-methyl-1-butanol, isobutyl alcohol, methyl isobutyrate, isobutyric acid, 3-methyl-1-butanol, 3-methylbutyl acetate, and ethyl butyrate.
20. The mixture of claim 19 wherein the at least two volatile organic compounds comprise isobutyric acid and at least one of 2-methyl-1-butanol, isobutyl alcohol, ethyl butyrate, and 3-methyl-1-butanol.
21. A synthetic mixture comprising pesticidally effective amounts of at least two volatile organic compounds isolatable from an isolated culture of *Muscodor albus* grown on potato dextrose agar.
22. The mixture of claim 21 wherein the at least two volatile organic compounds comprise 3-methylbutyl acetate and propionic acid, 2-methyl, 3-methylbutyl ester.
23. A synthetic mixture comprising pesticidally effective amounts of at least two volatile organic compounds isolatable from an isolated culture of *Muscodor albus* grown on brown rice grit.
24. A synthetic mixture comprising pesticidally effective amounts of at least three volatile organic compounds isolatable from at least one of an isolated culture of *Muscodor albus* grown on rye grain, an isolated culture of *Muscodor albus* grown

on brown rice grit, and an isolated culture of *Muscodor albus* grown on potato dextrose agar.

25. The mixture of claim 24 wherein the at least three volatile organic compounds comprise isobutyric acid and at least two of 2-methyl-1-butanol, isobutyl alcohol, ethyl propionate, ethyl butyrate, and 3-methyl-1-butanol.
26. The mixture of claim 24 wherein the at least three volatile organic compounds comprise 2-methyl-1-butanol and at least two of isobutyl alcohol, ethyl propionate, and ethyl butyrate.
27. The mixture of claim 24 wherein the at least three volatile organic compounds comprise ethyl butyrate, isobutyl alcohol, and ethyl propionate.
28. The mixture of claim 24 wherein the isolated culture of *Muscodor albus* is grown on rye grain.
29. The mixture of claim 24 wherein the at least three volatile organic compounds comprise 2-methyl-1-butanol, ethyl butyrate, isobutyl alcohol, phenethyl alcohol, ethyl isobutyrate, 2-methylbutyl acetate, and isobutyric acid.
30. The mixture of claim 24 wherein the at least three volatile organic compounds comprise 3-methyl-1-butanol, ethyl butyrate, isobutyl alcohol, phenethyl alcohol, ethyl isobutyrate, and isobutyric acid.
31. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to an effective amount of the *Muscodor* carrier formulation of claim 1.
32. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to the synthetic mixture of claim 17
33. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to the synthetic mixture of claim 19.
34. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to the synthetic mixture of claim 24.
35. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to an effective amount of 3-methylbutyl acetate.

36. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to an effective amount of 3-methyl-1-butanol.
37. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to an effective amount of isobutyl alcohol.
38. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to an effective amount of methyl 2-methylbutyrate.
39. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to an effective amount of methyl isobutyrate.
40. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to less than 2500 ppm 2-methyl-1-butanol.
41. A method for inhibiting the growth of organisms selected from the group consisting of microbes, insects, and nematodes comprising exposing the organism or a habitat of the organism to less than 2800 ppm isobutyric acid.